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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,348	01/16/2004	John Miller	TJT-13602/16	7451

25006 7590 09/09/2005

GIFFORD, KRASS, GROH, SPRINKLE & CITKOWSKI, P.C
PO BOX 7021
TROY, MI 48007-7021

EXAMINER

VIJAYAKUMAR, KALLAMBELLA M

ART UNIT	PAPER NUMBER
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1751

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/759,348

Applicant(s)

MILLER ET AL.

Examiner

Kallambella Vijayakumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-24, 26 and 31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26 and 31 is/are allowed.
- 6) ☒ Claim(s) 1-9 and 11-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

- Claims 1-9, 11-24, 26 and 31 as amended are currently pending with the application.
- Applicants remarks and amendments filed 06/22/2005 in response to the office action mailed 03/29/2005 is acknowledged, that overcomes the following rejections:

(a) Rejection of claims 1-9, 13, and 17-24 under 35 USC 102(e) as anticipated by Clerc et al (US 6,524,744).

(b). Rejection of claims 1, 3-4, 8 and 15-23 under 35 USC 102(b) as anticipated by Ikeda et al (US 6,492,063)

(c). Rejection of claims 21-24 under obviousness double patenting over US Patent 6,524,744.

Response to Arguments

Applicants argue that the instant claim limitations of "an amorphous electrochemically active material" and "spaced apart regions of said stabilizer phase having a size in the range of 10-100 nanometers" are not taught by the prior arts by Sato et al (US 6,544,687; WO 01/03210) and Sato et al (US 6,824,921) is not persuasive: The prior art/s teach the composition of the negative electrode containing amorphous intermetallic active materials, composition of the intermetallic active materials and the method of making the active material by mechanical alloying of the reactant components, forming a paste by mixing the active material with carbon/graphite and a binder and thereby forming the negative electrode of a battery which are identical in composition and methods to those disclosed by the applicants (Specification: pages-10, 14, and 15), whereby the spaced apart regions in the multiphase composite will be inherent. Applicants further argue that the prior art by Sato et al (US 6,544,687; WO 01/03210) teach a crystalline material and not an amorphous material (Col-5, Line-33 of the US patent) that is not correct. In fact the citation in Col-5, Lines 38-42 and the XRD in Fig-3 of US-687 clearly identifies the absence of peaks attributable to Fe-Sn type intermetallics showing the amorphous nature of the intermetallic compound. The XRD in Fig-3 of US-921 and Examples 1-5 (Col-8-9) clearly show the materials to be amorphous, unlike the applicant's arguments.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-8 and 11-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Sato et al (US 6,544,687).

The examiner notes a typographic error in the prior office action mailed 03/29/2005, that should read as Claims 1-8, 10-23 and 26 rejectedSato et al (US 6,544,687) that is corrected.

Sato et al teach a negative electrode comprising an amorphous solid solution/intermetallic with the composition satisfying the formula $\text{Li}_x\text{M}^1_y\text{M}^2_z$ wherein M^1 -Ti, Zr, Mn, Co, Ni, Cu and Fe, and M^2 -Si and/or Sn, $0 \leq x < 10$, $0.1 \leq y \leq 10$, and $z=1$ (Abstract, Col-2, Ln 7-24; Col-5, Lines 26-42, Fig-3). With regard to the limitation of the "spaced apart regions---10-100nm", in the claims 1 and 21, the prior art teaches forming the electrode from a paste containing the solid-solution/intermetallic, graphite/low-crystalline-carbon and PTFE in the ratio of 60:3:10 by wt in a petroleum solvent (Col-4, Ln 1-5; 47-54; Col-2, Ln 21-24), wherein the prior art composition and its method of making are identical to those claimed by the applicants and identical compositions have identical properties, and thus meet the limitations of claims 1-4 and 21-22.

With regard to Claims 5-7, the prior art teaches the amorphous intermetallics with a crystal grain size of 0.05-0.13 microns <50-130nm>, and wherein active phase matrix of the prior art composition, its particle size and its method of making are identical to those claimed by the applicants and identical compositions have identical properties. (Col-2, Ln 20; Col-5, Ln 26-37; Ln 38-42, Fig-3) (Specification: Page-10).

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With regard to Claims 8, 11-14 and 23, the prior art teaches an electrode containing carbon material such as graphite, acetylene black and low crystalline carbon material (Col-4, Ln 6-8). Further, the carbon black is a nanophase material with a particle size of 0.3-120 nm as shown by Weth et al (J. Porous. Matl., 2001, 8(4), Pg 319-325; Abstract).

With regard to claims 15-16, the prior art teaches FeSn_2 electrode material (Col-3, Ln 46-64, Col-6, Table-1).

With regard to claims 17-20, the claims are drawn to composition it-self.

All the limitations of the instant claims are met.

The reference is anticipatory.

2. Claims 1-8 and 11-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato et al (WO 01/03210).

The examiner notes a typographic error in the prior office action mailed 03/29/2005, that should read as Claims 1-8, 10-23 and 26 rejectedSato et al (WO 01/03210) that is corrected.

Sato et al (US 6,544,687) is being used as the exact English translation of Sato et al (WO 01/03210) in the present rejection.

Sato et al teach a negative electrode comprising an amorphous solid solution/intermetallic with the composition satisfying the formula $\text{Li}_x\text{M}^1_y\text{M}^2_z$ wherein M^1 -Ti, Zr, Mn, Co, Ni, Cu and Fe, and M^2 -Si and/or Sn, $0 \leq x < 10$, $0.1 \leq y \leq 10$, and $z = 1$ (Abstract, Col-2, Ln 7-24; Col-5, Lines 26-42, Fig-3). With regard to the limitation of the "spaced apart regions----10-100nm", in the claims 1 and 21, the prior art teaches forming the electrode from a paste containing the solid-solution/intermetallic, graphite/low-crystalline-carbon and PTFE in the ratio of 60:3:10 by wt in a petroleum solvent (Col-4, Ln 1-5; 47-54; Col-2, Ln 21-24), wherein the prior art composition and its method of making are identical to those claimed by the applicants and identical compositions have identical properties, and thus meet the limitations of claims 1-4 and 21-22.

With regard to Claims 5-7, the prior art teaches the amorphous intermetallics with a crystal grain size of 0.05-0.13 microns <50-130nm>, and wherein active phase matrix of the prior art composition, its particle size and its method of making are identical to those claimed by the applicants and identical

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compositions have identical properties. (Col-2, Ln 20; Col-5, Ln 26-37; Ln 38-42, Fig-3) (Specification: Page-10).

With regard to Claims 8, 11-14 and 23, the prior art teaches an electrode containing carbon material such as graphite, acetylene black and low crystalline carbon material (Col-4, Ln 6-8). Further, the carbon black is a nanophase material with a particle size of 0.3-120 nm as shown by Weth et al (J. Porous. Matl., 2001, 8(4), Pg 319-325; Abstract).

With regard to claims 15-16, the prior art teaches FeSn_2 electrode material (Col-3, Ln 46-64, Col-6, Table-1). With regard to claims 17-20, the claims are drawn to composition it-self.

All the limitations of the instant claims are met.

The reference is anticipatory.

3. Claims 1, 3-5, 7-9, 11, 13 and 17-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Sato et al (US 6,824,921).

Sato et al teach a negative electrode active material composition for a non-aqueous electrolyte secondary battery comprising: at least one nitride of an element (A) selected from the group A consisting of Ce, Co, Cr, Fe, La, Mn, Mo, Nb, P, Sc, Sr, Ta, Ti, V, Y, Yb, Zr, B, Ca, Mg, Na and Zn; and at least one substance of an element (B) selected from the group B consisting of Ge, Sn, Pb and Bi; wherein the average crystal grain size of said nitride is 0.001 to 0.1 microns and the content of the nitrogen to be preferably 1% by wt or more. The prior art further discloses the electrode active material composition to be amorphous with the particle size to be about 0.7 microns. The prior art also teaches forming an electrode by applying a paste containing negative electrode material, a graphite conductive agent and a SBR rubber in the weight ratio of 70:20:10 (Col-3, Ln 50-67; Col-5, Ln 18-23, Ln 63-67; Col-6, Ln 17-36; Col-7, Ln 20-26; Col-8, Ln 62-67; Fig-3). With regard to the nanophase domains of the active material and the stabilizer materials in the claims, the prior art composition, its particle size and its method of making are identical to those claimed by the applicants and identical compositions have identical properties and that meets the limitation of the claims. All the limitations of the instant claims are met.

The reference is anticipatory.

The examiner suggests the phrase "intersperse" in lieu of 'disposed' in claim-1, line-5 for the better clarity of the claims.

Allowable Subject Matter

Claims 26 and 31 allowed.

The prior art record neither teaches nor fairly suggest making of a multiphase composite material by forming a first portion by first mechanical alloying, adding a second portions of components to the first component followed by a second mechanical alloying per the claim-26 or by adding a plurality of components including a third and forth elements wherein third element displaces second element per the claim-31.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on 8-5.30 Mon-Thu, 8-4.30 Alt Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Warden can be reached on 571-272-1281. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMV
August 29, 2005.


Mark Kopec
Primary Examiner